Case report

VocalCordParalysisUnveilingaDilatedCardiomyopathy:ARareCaseofOrtner'sSyndromeandLiteratureReview

Abstract: OrtnerSyndrome(OS)isadisordercharacterizedbydysphoniaduetovascularcompressionoftheLeftRecurrentLaryngealNerve(LRLN),mainlybyheartorvesselsabnormalities.Wediscussthecaseofa56-year-oldpatientwithnomedicalpasthistory,whoentersourdepartmentduetofourmonthsofgrowinghoarseness.Theleftvocalcordwasparalyzed,accordingtovideostroboscopictesting.ACTscanoftheneckandchestwasordered,anditindicatedenlargedheartcavities.Thepatientwasaddressedtothecardiologydepartment,andwaslaterscheduledforheartsurgery.Thefollowupwasmarkedbyanimprovementofhishoarseness.Themostprevalentcauseof OSismitralvalvedisease,whichresultsinleftatrialdilatationandnervecompression.Thissicknessmaybeassociatedwithotherssymptomscausedbythecompressionoforganssuchastheesophagus.Treatmentisbasedonthetreatmentoftheunderlyingheartcondition.

Keywords: Nerve,Paralysis,VocalCord,Hoarseness

1. Introduction

OrtnerSyndrome(OS)isaconditionthatproducesdysphoniaduetovascularcompressionoftheLeftRecurrentLaryngealNerve(LRLN),suchasatrialenlargement[4].Alongitslongpath,theLRLNcanbecompressedbycardiacandvascularelements.Furthermore,thisnervecrossestheaorticarchposteriorlybeforeascendingtothetracheoesophagealgroove,causingittobemoresusceptibletocompressionbyotherstructures[1].OShasbeendefinedasanhypertrophyoftheleftatriumcausedbymitralstenosis,resultinginparalysisoftheLRLN.However,otheraetiologiesmayberesponsiblefor that,includingaorticaneurysms,pulmonaryarteryaneurysms,andatrialfibrillation.Althoughuncommon,dysphoniacandevelopasthesolesymptomofvasculardiseasessuchasthosementioned above[5].NobertOrtner,anAustrianclinician,firstdocumentedthisillnessinapatientwithmitralvalvestenosisandleftatrialdilatationincontextin1897[1].Variouscardiovasculardisordersrelated withLRLNpalsyhavebeendescribedoverthelastcentury.Becauseofthesefactors,thesyndromeissometimesknownascardiovocal syndrome.Giantcellarteritis,patentductusarteriosus,andpericardialeffusionareallunusualcausesofOS.Itismorefrequentinoldermen,butitcanalsoariseinchildrenwithcongenitalheartfailureinrare situations.Itisdifficulttolocatedataontheoccurrenceofthissyndromeintheliterature,althoughitiscurrentlyanuncommonphenomenonwithalowprevalence[6].

2. CaseReport

A56-year-oldmalepresentedtoourdepartmentwithafour-monthhistoryofprogressivehoarsenessanddysphonia.Hedeniedanyrespiratorysymptoms,chestpainordysphagia.Hedidnotsufferanyweightlossorfever.Thepatientwasa40pack-yeartobaccosmokerwithnoevidenceofpre-existingstructuralheartabnormalities orothermedicalconditionsidentified.Physicalexaminationrevealedleftvocalcordparalysisintheparamedianpositiononflexiblelaryngoscopy(Figure1),promptingfurtherinvestigation.Themacroscopicaspectofthevocalscordswasnormal.Nocervicallymphnodeswerepalpableandthethyroidglandwasnotenlarged.Theres toftheotolaryngologicexamwasnormal.

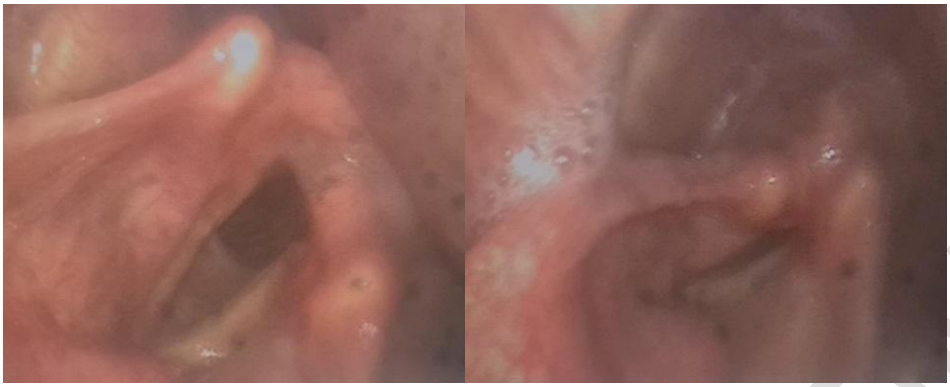

Figure1.*Videostroboscopyimages.*

Acervicothoraciccomputedtomographyangiography(CTA)revealedadilatationofthecardiaccavities,particularlyintheleftatrium,resultinginasignificantcardiomegalywithacardiothoracicindexof0.75andcompressingtheleftrecurrentlaryngealnerve.Thevocalcordswereasymetricalwithanenlargedleftpyriformsinusandlaryngealventricle.Echocardiographyconfirmedthepresenceofaseveredegenerativemitralandtricuspidregurgitationwithdilationanddysfunctionoftheleftcardiacchambers.Therightcavitieswerenormalandtheejectionfractionwas45%.

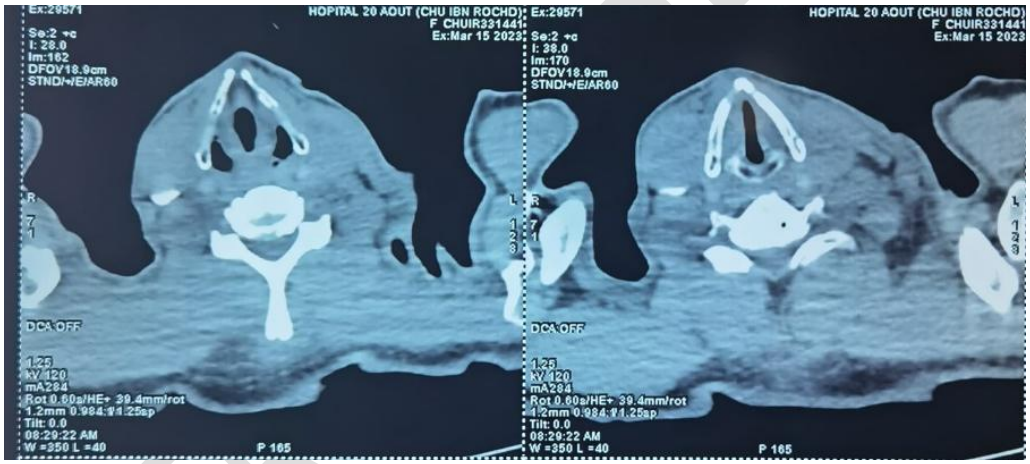

Figure2.*Ctscanofthelarynxshowingleftvocalcordparalysis.*

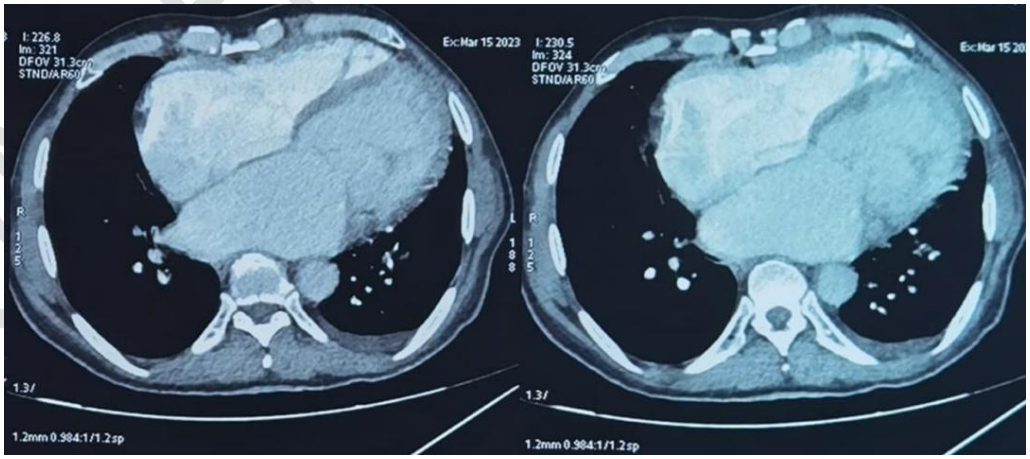

Figure3.*Ctscanshowingaseveredilationoftheleftcardiacchambers.*

Thepatientwasaddressedtothecardiologydepartmentwherea medicaltreatmentwasinitiatedandoptimized.Anelectrocardiog

ramandacoronarographywereperformedandthepatientwasscheduledforasurgicalinterventiontomanagebothmitralandtricuspidvalveregurgitation.

Thepatientunderwentsurgeryfollowedbyvoicerehabilitation.Hewassubsequentlyexaminedduringa12-monthfollow-up,revealingaslightimprovementofthehoarseness.Vocalcordmedializationsurgerywassuggested,butthepatientdeclinedtoproceedwiththeintervention.

3. Discussion

Surgicaltraumaandcancerinvasionofthethyroid,lung,andesophagushavebeenidentifiedasthemaincausesofrecurrentlaryngealnerveparalysis.

Ortner'ssyndromeisarareformofextralaryngealvoicehoarsenesscausedbymechanicalcompressionoftheleftrecurrentlaryngealnervebymediastinalstructures,resultinginhomolateralvocalcordparalysis.Ortneroriginallyproposedthatcompressivesymptomsinmitralstenosiswerecausedbyleftatrialenlargement,whichiscausedbyvariouscardiacorvalvularabnormalities,pulmonaryhypertension,aorticdisorders,rightsubclavianarteryaneurysm,andductusarteriosusaneurysm[1-4].Recurrentlaryngealnerveparalysiscanbecausedbyaventricularhypertrophyorpathologicalaortopulmonarylymphadenopathy[5].

TheleftRLNnormallyarisesfromtheleftvagusnervealongtheanterolateralboundaryoftheaorticarch,betweenthemainpulmonaryarteryandtheaorticarch.Itrisesinthespacebetweenthetracheaandtheesophagus,slightlybehindtheligamentumarteriosum.TherightRLNconnectsthetracheawiththeesophagusbycrossingandhookingaroundthefirstsectionofthesubclavianartery.Asaresult,adilatedpulmonaryartery,apersistingductusarteriosus,oranaorticarchaneurysmmaycompresstheRLN.

Toidentifythiscondition,thecompletetractoftherecurrentlaryngealnerves,includingtheirpassagethroughtheaortopulmonaryspace,mustbeexamined.Theinferiorextensionofthescanshouldincludethepulmonarybifurcation[1-3,6-8].

Forindividualswithpersistentdysphonia,anENTevaluationisrequired.Achronicdysphonialastingmorethantwoweeksshouldbecheckedandinvestigated,withthepotentialreasonsforvoicechangeassessed[6].Asaresult,imaginginvestigationsarenecessarytoruleoutacompressiveetiology(neoplasticorvascular)[7].

Onceavideofibroscopicevaluationhasdeterminedthatvocalcordparalysisisthecauseofhoarseness,theoriginoftheparalysismustbeinvestigated.Itiscriticaltoconfirmthattherearenoalarminglesionsvisibleonexamination[6].

Cervico-thoracicimaginginvestigationsshouldbeperformedtoruleoutcompressivecausesofparalysis.CTisthemostoftenusedtesttodaybecauseitcandetectindirectsymptomsofvocalparalysis,suchasmedialdisplacementoftheipsilateralposterioredgeofthevocalcords[9,10].Furthermore,itenablesustoassessawiderangeofcervical,cardiovascular,andthoracicdisordersthatproducerecurrentlaryngealnerveparalysis.Themediastinumuptothelevelofheaortopulmonarywindow(leftside)orthebrachiocephalicartery(rightside)shouldbeincludedintheCTscan[10].

AbasicchestX-raycanalsobeusedtodiagnosesomevascularcompressivecauses,providingequivalentsensitivityatalowercost[11,12].Therearevariousentitiesthatcancompresstheleft RLNduetocardiovascularreasons.Theprimarycausewasmitralvalvediseasewithleftatrialdilatation[1-3,6–8].Otherdiseasesthatmightproducethiscardiovocalconditionhavenowemerged,includingpulmonaryarteryaneurysmsandaorticaneurysms[12-15].

Indirectlaryngoscopy,pairedwithlaryngealelectromyography,confirmstheseverityofcordparalysis.

Theincidenceofcardiovocalsyndromevariesaccordingontheunderlyingcause;inmitralstenosis,itrangesfrom0.6%to5%,whereassurgeryforthoracicaorticaneurysmhasacomparativelyhighincidenceofmorethan32%.[15].

Inmostcases,treatmentrequirescorrectingtheunderlyingcondition.Thedurationandintensityofhoarsenessmayinfluencethetotalityandspeedofrecoveryofnormalvoice[3].

Inourcase,hoarsenesswaslinkedtocompressionoftheleftrecurrentlaryngealnerveintheaorto-pulmonarywindowcausedbyanenlargedleftatriumcausedbymitralstenosis,andmitralandtricuspidvalvesurgeryreducedslightlyvoicehoarseness.

Cliniciansshouldbeawarethatpatientswhopresentwithhoarsenessofvoicerequiremeticulousevaluationinordertoruleoutsignificantcardiovascularillnesses.

4. Conclusion

Ortnersyndrome,alsoknownascardiovocalsyndrome,isarareconditioncharacterizedbyleftRLNparalysiscausedbyextrinsiccompressionofacardiovascularetiology.Thepathologyofthemitralvalvehasbeenthemoststudiedetiology,althoughnewdiseasesresponsibleforthisillness,suchasaorticdissectionandaorticandpulmonaryaneurysms,havesurfacedinrecentyears.Hoarsenessisthemostcommonsymptom.Toruleoutmalignantpharyngolaryngeallesions,acorrectanamnesisandafibroscopicexaminationarerequiredforitsdiagnosis.Todeterminethecompressivecause,imagingstudiesmustbeperformed.Treatmentisbasedonthetreatmentoftheunderlyingcardiovascularcondition,andthereareseveralstrategiesfortreatingvocalparalysis.

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